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EXAMINER

FUREMAN, JARED

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/692,371

Applicant(s)

KRUL ET AL.

Examiner

Jared J. Fureman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 9-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1-4, 9-15 and 17-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Receipt is acknowledged of the extension of time and amendment, filed on 4/30/2003, both of which have been entered in the file. Claims 1-4 and 9-29 are pending. It is noted that page 1 of the amendment gives instruction to cancel claims 5-8. However, page 2 indicates that claims 5-7 were cancelled and 1-4 and 8-29 are pending. Thus, it is unclear as to whether applicant's intended to cancel claim 8 or not. Since page 1 indicated that claims 5-8 should be cancelled, claim 8 (as well as 5-7) has been cancelled. If applicants did not intend to cancel claim 8, it is suggested that a new claim be added that corresponds to cancelled claim 8.

Claim Objections

1. Claim 26 is objected to because of the following informalities: Claim 26 is objected to as being incomplete, since claim 26 depends from cancelled claim 8. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 12, 13, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haghiri et al (US 5,888,624) in view of Tsuji (JP 4-91475 A) and Brown et al (Logic Gates Made From Polymer Transistors and Their Use in Ring Oscillators, cited by applicant).

Haghiri et al teaches a substrate (card body 3) which is made from paper and is provided with at least one integrated circuit (electronic module 1), wherein the integrated circuit is contactlessly readable integrated circuit (an electronic module suitable for noncontacting data exchange) which can be read in an inductive or capacitive manner, wherein the substrate comprises additional security features (see column 9 lines 51-54), wherein an additional security feature is fluorescent material (fluorescent fibers) (see figure 1, column 2 lines 31-56, column 3 lines 51-58, column 4 lines 38-45, and column 9 lines 51-54).

Haghiri et al fails to teach the integrated circuit being a flexible integrated circuit.

Tsuji teaches a flexible integrated circuit (2) formed on a flexible substrate (3) made from an organic material (see figures 1, 2, and the translation of the abstract).

In view of Tsuji's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the substrate as taught by Haghiri et al, the integrated circuit being a flexible integrated circuit, in order to alleviate restrictions on handling and mounting the integrated circuit (see the translation of the Purpose of Tsuji).

Haghiri et al as modified by Tsuji fails to specifically teach the integrated circuit comprising a semiconductive organic polymer, wherein the organic polymer is selected from conjugated polymers, wherein the organic polymer is poly(thienylenevinylene), an insulating layer on the semiconductive organic polymer.

Brown et al teaches an integrated circuit comprising a semiconductive organic polymer, wherein the organic polymer is selected from conjugated polymers, wherein

the organic polymer is poly(thienylenevinylene), an insulating layer on the semiconductive organic polymer (see pages 972 and 974).

In view of Brown et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify, the substrate as taught by Haghiri et al as modified by Tsuji, to include: the integrated circuit comprising a semiconductive organic polymer, wherein the organic polymer is selected from conjugated polymers, wherein the organic polymer is poly(thienylenevinylene), an insulating layer on the semiconductive organic polymer, in order to provide a semiconductor that is less expensive than the conventional silicon chip (see Brown et al).

2. Claims 9-11, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haghiri et al as modified by Tsuji and Brown et al as applied to claim 1 above, and further in view of the admitted prior art.

Haghiri et al as modified by Tsuji and Brown et al fails to specifically teach wherein the integrated circuit comprises a preprogrammed code which is applied before incorporating the circuit in the substrate, wherein the integrated circuit comprises a code of an intrinsic property of the substrate, which code, after the substrate is produced, is arranged in the integrated circuit, wherein the code is an encrypted code, wherein the paper has a thickness up to 100 μm .

The admitted prior art teaches that it was well known in the art at the time of the invention to provide an integrated circuit that comprises a preprogrammed code which is applied before incorporating the circuit in the substrate (see the specification page 7 line 31 - page 8 line 15), wherein the integrated circuit comprises a code of an intrinsic

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property of the substrate, which code, after the substrate is produced, is arranged in the integrated circuit (see the specification page 7 line 31 - page 8 line 15), wherein the code is an encrypted code (see the specification page 7 line 31 - page 8 line 15), and that for banknote paper the thickness of the substrate usually lies in the range of up to 100 μm (see the specification page 4 lines 35-37).

In view of the admitted prior art, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the substrate, as taught by Haghiri et al as modified by Tsuji and Brown et al, to include: the integrated circuit comprises a preprogrammed code which is applied before incorporating the circuit in the substrate, wherein the integrated circuit comprises a code of an intrinsic property of the substrate, which code, after the substrate is produced, is arranged in the integrated circuit, wherein the code is an encrypted code, wherein the paper has a thickness up to 100 μm , in order to provide greater security for the substrate, and to provide banknotes with greater security.

5. Claims 14, 15 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haghiri et al as modified by Tsuji and Brown et al as applied to claim 1 above, and further in view of Giustiniani et al (EP 0 753 623 A2, cited by applicant).

Haghiri et al as modified by Tsuji and Brown et al fails to specifically teach, a security document comprising the substrate, the security document being a banknote, a passport, identity card, or a security.

Giustiniani et al teaches a security document comprising a substrate, the security document being a banknote (currency bill), passport, identity card, or a security (a check) (see page 2 lines 3-8, 42-44, and page 3 lines 27-34).

In view of Giustiniani et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the substrate, as taught by Haghiri et al as modified by Tsuji and Brown et al, to include: a security document comprising the substrate, the security document being a banknote, passport, identity card, or a security, in order to provide greater security against counterfeiting for documents that require an anti-forgery system.

6. Claims 17 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haghiri et al as modified by Tsuji and Brown et al, further in view of Bratchley et al (US 6,155,605, previously cited).

The teachings of Haghiri et al as modified by Tsuji and Brown et al have been discussed above. Haghiri et al also teaches providing the integrated circuit with electrical contacts (12) (see figure 1 and column 4 lines 38-45, note that the integrated circuit can be contact or non-contact).

Haghiri et al as modified by Tsuji and Brown et al fails to specifically teach wherein the integrated circuit forms part of an optically active element, wherein the optical active element is a hologram.

Bratchley et al teaches a substrate having an optically active element (a foil or hologram) included with another security feature (another entity) (see column 4 line 36 - column 5 line 26).

In view of Bratchley et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the system as taught by Haghiri et al as modified by Tsuji and Brown et al, wherein the integrated circuit forms part of an optically active element, wherein the optical active element is a hologram, in order to provide greater security.

7. Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haghiri et al as modified by Tsuji and Brown et al as applied to claim 1 above, and further in view of Uetani et al (JP 8-259709, previously cited).

Haghiri et al as modified by Tsuji and Brown et al fails to specifically teach the substrate further comprising polyimide having polyaniline blocks thereon underneath the semiconductive organic polymer, the substrate having an uppermost layer of polyaniline.

Uetani et al teaches the use of a polyimide having a polyaniline for a semiconductor sheet (see the translation of the abstract).

In view of Uetani et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the system as taught by Haghiri et al as modified by Tsuji and Brown et al, the substrate further comprising polyimide having polyaniline blocks thereon underneath the semiconductive organic polymer, the substrate having an uppermost layer of polyaniline, in order to provide a semiconductor that is stable even when environmental conditions fluctuate.

3. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haghiri et al as modified by Tsuji and Brown et al in view of Kodukula et al (US 6,118,379).

The teachings of Haghiri et al as modified by Tsuji and Brown et al have been discussed above.

Haghiri et al as modified by Tsuji and Brown et al fails to teach a conductive security thread, wherein the conductive security thread is connected to the integrated circuit; wherein the integrated circuit forms part of the security thread; wherein the security thread has a thickness of 5-60% of the substrate.

Kodukula et al teaches a substrate (120) including a conductive security thread (antenna 118 can be interpreted as a conductive security thread, since the antenna conducts and may be used in a RFID tag security application), wherein the conductive security thread is connected to an integrated circuit (128); wherein the integrated circuit forms part of the security thread (since the integrated circuit is connected to the security thread, the integrated circuit forms part of the security thread); wherein the security thread has a thickness of 5-60% of the substrate (as can be seen in figure 2B, the security thread 118 has a thickness in the range of 5-60% of the thickness of the substrate) (see figures 2A, 2B, column 1 lines 20-24, column 3 lines 34-52, column 4 lines 45-61, and column 5 lines 28-33).

In view of Kodukula et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the substrate as taught by Haghiri et al as modified by Tsuji and Brown et al, a conductive security

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thread, wherein the conductive security thread is connected to the integrated circuit; wherein the integrated circuit forms part of the security thread; wherein the security thread has a thickness of 5-60% of the substrate, in order to allow the substrate to be used in security applications.

Allowable Subject Matter

4. Claim 16 has been allowed over the prior art of record.
5. The following is a statement of reasons for allowance and the indication of allowable subject matter: The prior art of record, taken alone or in combination, fails to teach or fairly suggest: a security thread comprising an insulating support bearing a flexible integrated circuit comprising a semiconductive organic polymer provided with electrical contacts for the integrated circuit, in combination with the other claimed limitations as set forth in the claims.

While various prior art of record (for example: Giustiniani EP 0 753 623 A2, Kaule et al US 5,112,672, and Schneider US 4,763,927) teach conductive security threads, the prior art of record does not teach security threads having a flexible integrated circuit comprising a semiconductive organic polymer. As discussed above, Brown et al teaches semiconductive organic polymers useful for low-end data storage and cheap integrated electronic circuits. However, Brown et al only provides motivation for replacing conventional silicon chips with the semiconductive organic polymers. Therefore, without the benefit of applicant's invention, there is no motivation for one of ordinary skill in the art at the time of the invention to combine the teachings of the prior art in a manner so as to create the claimed invention.

R sponse to Arguments

6. Applicant's arguments with respect to claims 1-4, 8-15, and 17-26 have been considered but are moot in view of the new ground(s) of rejection. As discussed above, Tsuji teaches the use of a flexible integrated circuit and flexible semiconductive substrate.

Remarks

7. It is noted that claim 27 is broader than cancelled claim 5 (which had been indicated as containing allowable subject matter), thus allowing a broader interpretation of claim 27 than was given claim 5. Thus, claims 27-29 have been rejected over prior art.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Baldi (US 6,547,151 B1), Yoshida et al (US 2003/0089904 A1), Garber et al (US 6,486,780 B1), and Reiner (US 2002/0172016) all teach substrates including integrated circuits.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jared J. Fureman whose telephone number is (703) 305-0424. The examiner can normally be reached on 7:00 am - 4:30 PM M-T, and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on (703) 305-3503. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

July 27, 2003

Jared J. Fureman
Jared J. Fureman
Art Unit 2876